BOTANY.

The Fresh-water Algæ of the Plains.— North-west of Thedford, Thomas Co., Nebraska, in the valley of the Middle Loup river, are quite a number of small stagnant ponds. They are chiefly portions of the river, cut off by the railroad which runs up the valley, or excavations along the track filled by rain drainage. On the 7th of August, 1889, I stopped here a day for the purpose of collecting algæ. The "Sand Hill region" of Nebraska is not one to which one would naturally turn for collecting algæ, but the list given below, which is the result of our day's work, shows it to contain an interesting algæ flora.

The ponds are shallow (2 to 8 in. deep), and have usually a firm, solid bottom, so that one may easily wade around in searching for specimens. The water is slightly alkaline. The edges of the ponds are usually lined with rank growths of various sedges and grasses, with, frequently, patches of the common arrow-head (*Sagittaria variabilis*, Engelm). One pond was noticeably lined by a thrifty growth of the rare grass *Catabrosa aquatica* (L.) Beauv. It extended into the pond for some distance, to where the water was nearly a foot deep. Quantities of *Potemogeton* and *Zanichellia palustris* L. grow from the bottoms of the ponds, and are frequently mixed with several species of *Chara*. In some of the ponds I collected also the beautiful Bladderwort, *Utricularia vulgaris* L. Its clusters of bright yellow flowers, here and there extending above the surface of the water, had a pleasing effect. At the edge of one pond I discovered also the little Bladderwort, *Utricularia minor* L. I notice that this commonly extends out a foot or so from the water, on the damp or wet bank, around the roots of sedges, etc. The three Duckweeds, *Lemna minor* L., *Lemna trisulca* L., and *Spirodela polyrrhiza* (L.) Schleid., are common in almost every pond. The liverwort, *Riccia fluitans* L. also occurs commonly.

The species of Algæ proper collected were as follows:—

CHROOCOCCACEÆ.

Merismopedia glauca Naeg. Not apparently very common here. In the eastern part of the State I have found it frequently.

Merismopedia violacea (Breb.) Kutz. Quite common, forming violet or purplish slimy masses, which sometimes reach the size of a

man's hand. It much resembles in appearance floating particles of decaying flesh, in this respect being similar to *Chlamydococcus pluvialis* A. Br., from which it is with difficulty distinguished without the aid of a microscope. (The latter I collected in quantity in a pond in Wessington Hills, Dakota, last April. The color is a somewhat deeper violet purple.) This interesting little plant has not been found before in America, so far as known. It is distinguished from known American species by its smaller size and violet color. Rev. Francis Wolle has examined specimens of it and confirmed my identification. I have to thank him also for much aid in my study of Algæ.

Chroococcus cohærens Næg. A beautiful blue-green species. Common.

NOSTOCACEÆ.

Oscillaria. Several species were observed.

Nostoc pruniforme Ag. Very common, forming olive or dark brown, nearly regular balls, from one millimeter diameter to the size of a plum. Floating in every pond.

PALMELLACEÆ.

Scenedesmus caudatus Corda. Var. *typicus* Kirch. Usually of two or four cells.

Scenedesmus dimorphus Kg. Not common.

Scenedesmus obtusus Meyen. Very common, presenting a number of forms.

Pediastrum angulosum (Ehr.) Menegh. Common. Cells about 16 μ in diameter.

Pediastrum borganum (Turpin.) Menegh. Common in several stages of development. Empty colonies occur frequently, the zoogonidia having escaped from all the cells.

Raphidium polymorphum Fres. One specimen was observed in the examination of the material, belonging probably to the variety *sigmoideum* Rab.

Polyedrium trigonum Næg., var. *punctatum* Kirch. Several specimens that I take to be this variety were found.

Protococcus viridis Ag. A deep green aquatic variety is quite common.

Euglena viridis (Schrank.) Ehrenb.

DESMIDIACEÆ.

We are usually told that desmids are to be sought in fresh, pure water only. My experience in Nebraska has not confirmed this statement. I have frequently searched running waters and springs for

them, but have seldom been rewarded, while I have found them almost exclusively in what I should term stagnant water.

Docidium baculum (Breb.) D. By. Not common.

Cosmarium bioculatum Breb. Not uncommon.

Cosmarium conspersum Ralfs. Not common.

Cosmarium meneghinii Breb. Not common.

Cosmarium nitidum De Not. Not common.

Cosmarium pulcherrimum Nord. Not common.

Cosmarium undulatum Corda. The only specimen found was partially undeveloped, but appears to be this species.

Euastrum verrucosum (Ehrb.) Ralfs. A common form.

Staurastrum gracile Ralfs. Not uncommon.

Staurastrum polymorphum Breb. Not common.

DIATOMACEÆ.

Diatoms are, as in most places, common objects. Species of *Epithemia* predominate.

Cymbella gastroides Kutz. A large form, usually about 130 μ long.

Navicula iridis Ehr., var. *amphigomphus* Ehr.

Navicula major Kutz. Common.

Naviculo producta W. Sm. Not common. About 42 μ long.

Pleurosigma intermedium W. Sm. Rare.

Gomphonema clavatum Ehr. Rare. Length about 32 μ.

Gomphonema constrictum Ehrb. Common. Length 32–64 μ.

Cocconeis pediculus Ehr. Common. Elliptical, 13–19 by 18–22 μ.

Epithemia gibba Kutz. Not so common as the next. About 138 μ long.

Epithemia turgida (Ehr.) Kutz. Very common. From 46–91 μ long, usually about 16 μ wide. A very beautiful form.

Synedra ulna (Nitsch) Ehr. Common. A very long variety of this was also found.

Fragilaria harrisonii (W. Sm.) Grun. Only one frustule found. Size 14 by 22 μ.

Melosira varians Ag. Quite common. Forming in filaments from 15–16 μ wide.

Quite a number of other species were observed, of the genera *Nitzschia, Ceratoneis*, etc., but their identification remains doubtful.

ZYGNEMACEÆ.

Zygnema cruciatum Ag. Common in some of the ponds.

No attempt was made to collect the larger Algæ. Great masses of what I took to be Spirogyra floated in some of the ponds. Cushions of Vaucheria were common on the wet banks.—H. J. WEBBER, *Botanical Laboratory, University of Nebraska.*